UNIVERSAL TEMPERATURE METERS

MODEL PD750, PD751 & PD752

PRECISION DIGITAL

2456F

ENTER | ACK
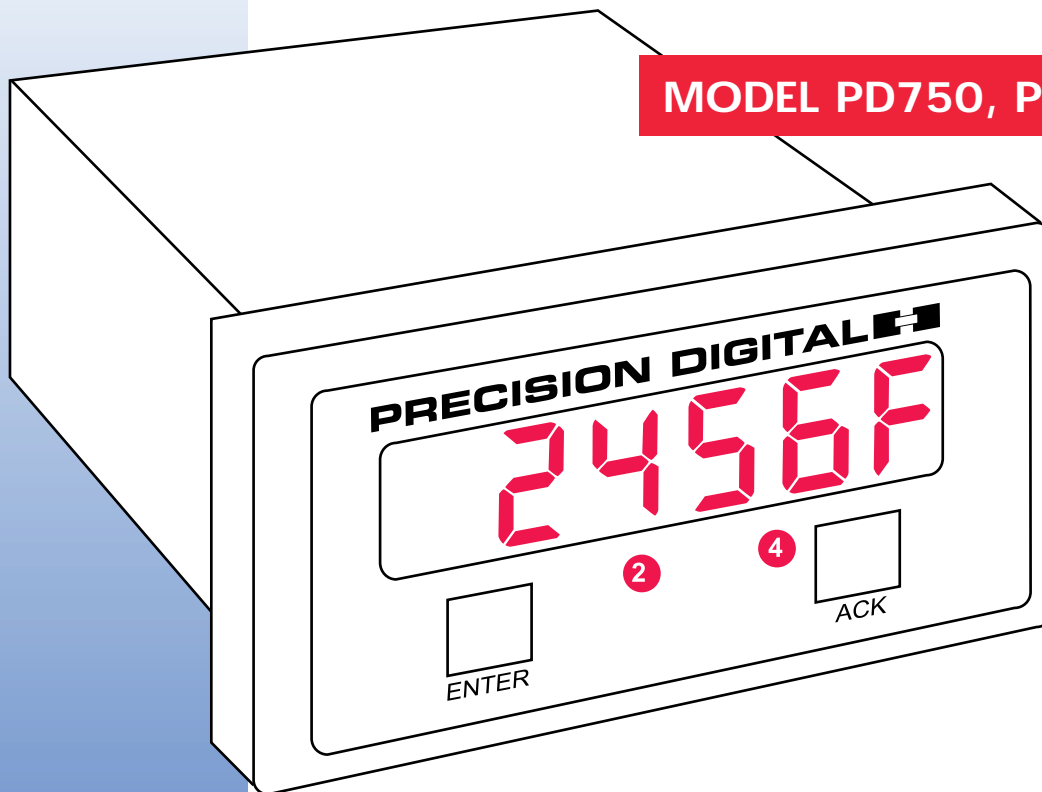
- **PD750 Handles Thermocouple and RTD Inputs***
  - **J,K,T,E,R, & S Thermocouples***
  - **Type T Thermocouple Displayed to 0.1°**
  - **100 Ω Platinum RTD (0.00385 or 0.00392 curve)**
- **10 Ω Copper RTD (PD751)**
- **120 Ω Nickel RTD (PD752)**
- **RTD Displayed to 1° or 0.1°**
- **Display °F or °C***
- **Factory Calibrated for All Inputs**
- **Type 4X, NEMA 4X Front Panel**
- **4 Visual Alarm Points with Front Panel Indication**
- **2 or 4 Relays + 4-20 mA Output Options**
- **Green Display Available**

c(UL)us (PD750 AC Powered Units Only)
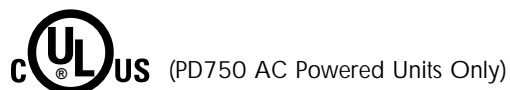
* field selectable

GENERAL FEATURES

Precision Digital Universal Temperature Meters handle temperature displaying, alarming and re-transmitting applications with simplicity, accuracy and reliability. These meters are available with up to 4 relays, isolated 4-20 mA output, and are factory calibrated for easy field selection of the thermocouple or RTD type. Just select your input type (J,K,T,E,R,S thermocouple, 100 Ω RTD, 10 Ω copper, or 120 Ω nickel), and either Fahrenheit or Celsius and connect the sensor.

Easy Setup with One Button

These meters can be completely programmed using only one button. And you only do one thing with that one button: press it once when the meter displays what you want. For example, press the **ENTER** button to initiate an automatic scan of the various programming routines: *CAL Ib*, *tYPE*, *F or C*, *ALArS*. To enter one of these routines, press the **ENTER** button as the routine name is displayed. Once in the routine, press the **ENTER** button when the meter reads the desired value. It's that simple!
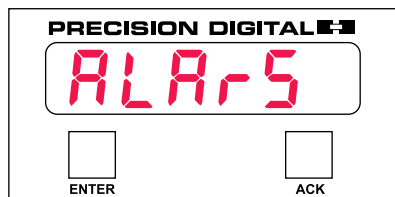
Setup with One Button

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tYPE

ENTER   ACK
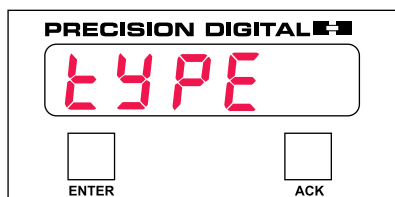
To Select Input Type:
Press **ENTER** when meter reads *tYPE*.

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F or C

ENTER   ACK
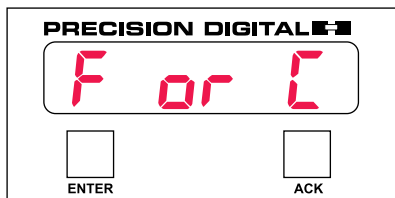
To Select Scale:
Press **ENTER** when meter reads *F* or *C*.

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ALArS

ENTER   ACK

To Program Alarms:
Press **ENTER** when meter reads *ALArS*.

NEMA 4X Front Panel (Type 4X for PD750)

Wet, dirty and dusty environments don't bother the NEMA 4X (Type 4X for PD750) front panel which allow these meters to be installed in almost any panel in the plant. That means plant operators can have the important information right where they need it most, on the shop floor.

Big Bright Steady Display

These meters are great for displaying high temperatures because the steady and quick responding display can display 4 1/2 digits of data. This allows thermocouples to be displayed above 2000°F and RTDs above 200° to a 0.1° resolution. The 0.56″ LED display is available in either red or green.

Calibration

The PD750 is shipped pre-calibrated for 6 types of thermocouples and 2 types of 100 Ω RTD sensors with 0.1° or 1° resolution. Although initial calibration is not necessary, these 8 input ranges may be re-calibrated in the field to improve accuracy (calibrator required.)

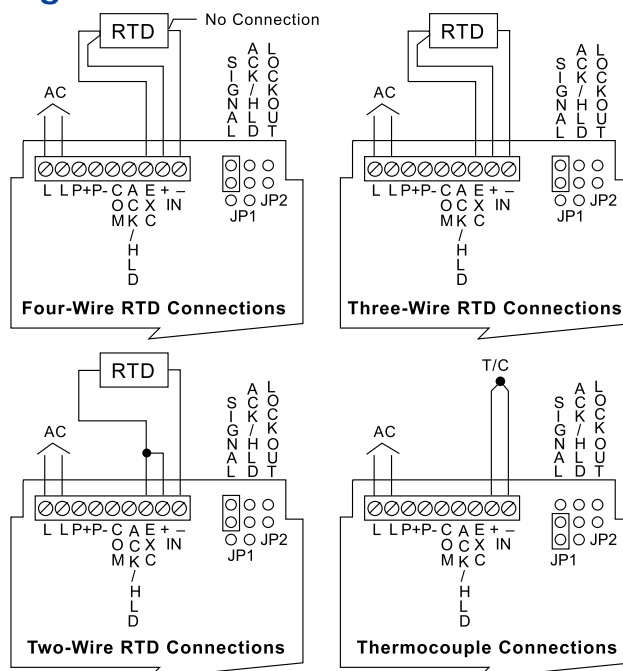The PD751 is pre-calibrated for 10 Ω copper RTD sensors and the PD752 is pre-calibrated for 120 Ω nickel RTD sensors.

Pre-Calibrated Ranges

PD750 Input	Range	Accuracy
Type J T/C	-328° to 1382°F -200° to 750°C	±2°F ±1°C
Type K T/C	-328° to 2498°F -200° to 1330°C	±2°F ±1°C
Type T T/C	-330° to 760°F -200° to 404°C	±2°F ±1°C
Type T T/C (0.1°)	-330.0° to 760.0°F -200.0° to 404.0°C	±2°F ±1°C
Type E T/C	-328° to 1832°F -200° to 1000°C	±2°F ±1°C
Type R T/C	32° to 3213°F 0° to 1767°C	±5°F ±3°C
Type S T/C	40° to 3214°F 4° to 1768°C	±6°F ±3°C
100 Ω Platinum RTD	-328.0° to 1382.0°F -200.0° to 750.0°C	±0.7°F ±0.4°C

PD751 Input	Range	Accuracy
10 Ω Cu RTD	-328° to 500°F -200° to 250°C	±0.2°F ±0.1°C

PD752 Input	Range	Accuracy
120 Ω Ni RTD	-112° to 608°F -80° to 320°C	±0.2°F ±0.1°C

Signal & Power Connections

Four-Wire RTD Connections

Three-Wire RTD Connections

Two-Wire RTD Connections


Thermocouple Connections

4 Visual Alarms Standard

Every temperature meter comes with 4 visual independent alarms. Each alarm is easily programmed for high or low set point and 0-100% deadband adjustment. Front panel LEDs assist in set point/reset point programming and are perfect for visual-indication-only applications. Options are available for 2 and 4 relays.

Alarm/Relay Programming

Pressing the **ENTER** button when the display reads ᴿᴸᴿʳ5 initiates a scan of the alarm set and reset points. First, the display flashes Alarm #1 Set Point and indicates this by illuminating the #1 LED and the "S" LED. This Set Point may be changed using the ENTER button. Next the display flashes Alarm #1 Reset Point and indicates this by illuminating the #1 LED and the "R" LED. This Reset Point may also be changed using the ENTER button. The remaining Set and Reset Points are programmed in a similar fashion.
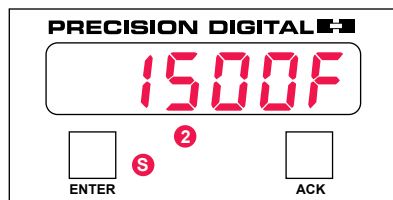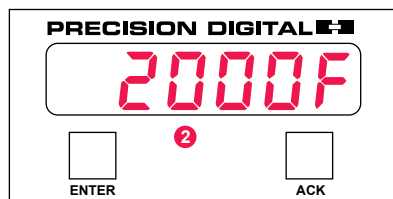

Alarm #2 Set Point set at 1500°F.
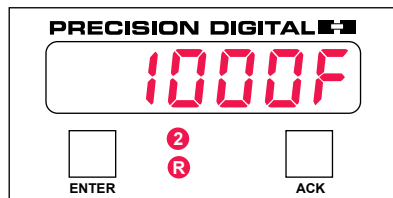
Alarm #2 Reset Point set at 1000°F.

Alarm Status Indication

When an alarm occurs, an LED will illuminate to indicate which alarm has tripped. This LED will stay illuminated until the signal returns to the non-alarm state.

LED illuminated indicating that Alarm #2 is in alarm condition.

Option Card Pin-Outs

Pin:	Function:	
J1 { 1	Transmitter +	] PD175
2	Transmitter -	
J2 { 1	Relay #1 Common	
2	Relay #1 NC	] PD176
3	Relay #1 NO	PD174
4	Relay #2 Common	
5	Relay #2 NC	PD178
6	Relay #2 NO	
J3 { 1	Relay #3 Common	PD177
2	Relay #3 NC	
3	Relay #3 NO	
4	Relay #4 Common	
5	Relay #4 NC	
6	Relay #4 NO	

Notes:
1. Alarm acknowledgement terminals (ACK and COM) are located on the meter main board.
2. In the alarm condition, the NC contact is connected to common in the fail-safe mode.

OPTIONS

These Universal Temperature Meters can be equipped with options for 2 or 4 relay contacts and isolated 4-20 mA transmitter output. These options may be combined in any configuration to satisfy a wide variety of applications. In fact, a fully loaded model PD750-3-18 includes 4 relays and isolated 4-20 mA transmitter output.
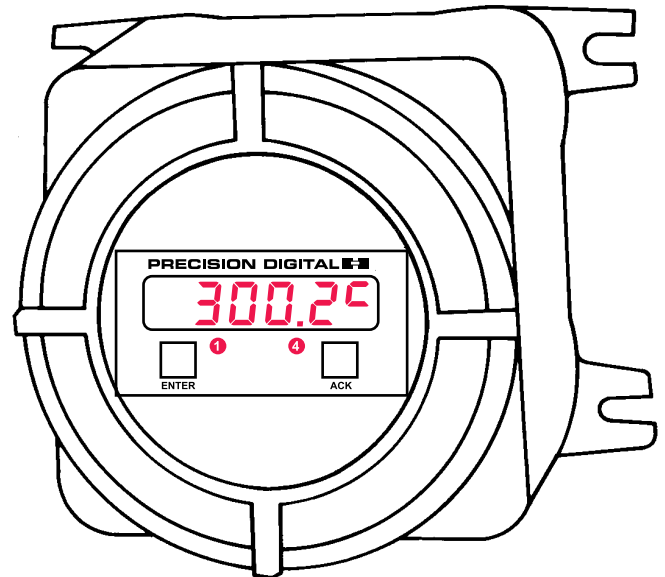
Relay Options

These meters are available with 2 or 4 relays. The SPDT relays are rated 2 Amp @ 250 VAC and can be programmed for automatic or automatic + manual reset. The relays can be programmed for 0-100% deadband adjustment.
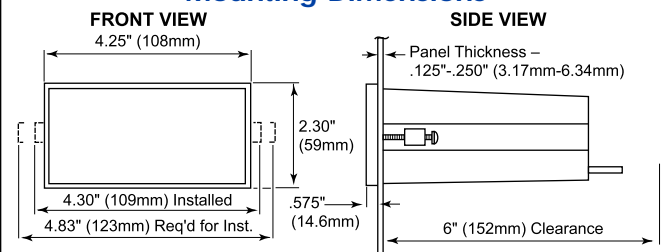
Isolated 4-20 mA Output Option

Equipped with an isolated 4-20 mA output signal option, these meters can be programmed to produce a 4-20 mA output signal for virtually any temperature input. The 4-20 mA output signal can be powered either by the internal or an external power supply. The 4-20 mA output provides 500 VDC or peak AC, input-to-output or input/output-to-power isolation.

The isolated 4-20 mA output signal option transforms these meters into linearized, cold-junction compensated, temperature transmitters with a digital display.

Temperature Meter mounted in a PDA2444 explosion-proof enclosure.

Mounting Dimensions

FRONT VIEW
4.25" (108mm)
2.30" (59mm)
4.30" (109mm) Installed
4.83" (123mm) Req'd for Inst.
.575" (14.6mm)

SIDE VIEW
Panel Thickness – .125"-.250" (3.17mm-6.34mm)
6" (152mm) Clearance

Notes:
1. Panel cutout required: 1.772″ x 3.622″ (45 mm x 92 mm) 1/8 DIN
2. Panel thickness: 0.125″ - 0.250″ (3.17 mm - 6.34 mm)
3. Clearance: allow 6 inches (152 mm) behind the panel
4. Weight: 16 oz (454g)

SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

General

INPUTS: PD750: Field selectable: type J, K, T, E, R, or S Thermocouples with 1° resolution; type T to 0.1°; 100 Ω platinum RTD (.00385 or .00392 curve) to 1° or 0.1° resolution.

> PD751: 10 Ω copper RTD
> PD752: 120 Ω nickel RTD

DISPLAY: Bright, large, 0.56" (14.2mm) high efficiency red or green, 4$\frac{1}{2}$ digits. F or C may be switched on to indicate Fahrenheit or Celsius.

COLD JUNCTION REFERENCE: Automatic, fixed, no user calibration needed.

T/C OPEN INDICATION: Open thermocouple circuit indicated by display flashing "OPEN". Status of relays undetermined.

HOLD READING: Connect switch to ACK/HLD and COM terminals, also connect jumper pins on rear.

ACCURACY: See Thermocouple and RTD chart, page 2.

LOCKOUT: Jumper JP2 at rear of instrument restricts modification of calibration values.

INPUT IMPEDANCE: Greater than 100 kΩ.

POWER: AC power: 115 VAC ± 10%, 50/60 Hz, 10VA.
> 230 VAC ± 10%, 50/60 Hz, 10VA.
> DC power: 18-36 VDC, 6 watts max.

ISOLATION: AC power: 1500 VAC; DC power: 500 VDC.

NORMAL MODE REJECTION: 64 dB at 50/60 Hz

ENVIRONMENTAL: Operational ambient temperature range: 0 to 60°C. Storage temperature range: -40 to + 85°C. Relative humidity: 0 to 90% non-condensing.

ENCLOSURE: 1/8 DIN, high impact plastic, UL 94V-0, color: black.

FRONT PANEL: Type 4X, NEMA 4X, panel gasket provided.

CONNECTIONS: Removable screw terminal block.

ALARM POINTS: 4, any combination of high or low alarms.

ALARM STATUS INDICATION: Front panel LED

ALARM DEADBAND: 0-100% of full scale, user selectable.

UL FILE NUMBER: E160849; 508 Industrial Control Equipment (PD750 AC Powered Units Only).

WARRANTY: 1 year parts and labor.

EXTENDED WARRANTY : Warranty may be extended an additional 12 months by returning the Product Registration Form within 2 months from date of purchase. Go to www.predig.com for online registration.

Relays

RATING: 2 or 4 SPDT (form C); rated 2 Amp @ 30 VDC or 2 Amp @ 250 VAC resistive load; 1/14 HP @ 125 / 250 VAC for inductive loads.

RESET: User selectable.
1. Automatically when the input passes the reset point.
2. Automatically + manually (via user supplied switch or front panel ACK button). Manual reset resets all manually resettable relays.

FAIL-SAFE OPERATION: The relay coils are energized in the non-alarm condition. In the case of a power failure, the relays will go to the alarm state. To disable fail-safe operation remove jumper J2 located on the Options PCB.

AUTO INITIALIZATION: When power is applied to the meter, the relays will always reflect the state of the input to the meter.

DEADBAND: 0-100%, user selectable.

Isolated 4-20 mA Transmitter Output

CALIBRATION RANGE: Anywhere in range of meter.

OUTPUT LOOP RESISTANCE:

Power supply	Loop Resistance	
	minimum	maximum
24 VDC	10Ω	600Ω
35 VDC (external)	600Ω	1000Ω

ACCURACY: ± 0.1% F.S., ± .004 mA.

ISOLATION: 500 VDC or peak AC, input-to-output or input/output-to-power line.

EXTERNAL LOOP POWER SUPPLY: 35 V max.

DISCLAIMER: The information contained in this document is subject to change without notice. Precision Digital makes no representations or warranties with respect to the contents hereof, and specifically disclaims any implied warranties of merchantability or fitness for a particular purpose.

ORDERING INFORMATION	Model PD750, PD751 & PD752			
115 VAC	**230 VAC**	**24 VDC**	**Description**	**Option Card****
Thermocouple 100 Ω RTD				
PD750-3-N*	PD750-4-N	PD750-2-N	No Options	
PD750-3-14*	PD750-4-14	PD750-2-14	2 Relays	PD174
PD750-3-15*	PD750-4-15	PD750-2-15	4-20 mA Output	PD175
PD750-3-16	PD750-4-16	PD750-2-16	2 Relays + 4-20 mA Output	PD176
PD750-3-17	PD750-4-17	PD750-2-17	4 Relays	PD177
PD750-3-18	PD750-4-18	PD750-2-18	4 Relays + 4-20 mA Output	PD178
10 Ω Copper				
PD751-3-N	PD751-4-N	PD751-2-N	No Options	
PD751-3-14	PD751-4-14	PD751-2-14	2 Relays	PD174
PD751-3-15	PD751-4-15	PD751-2-15	4-20 mA Output	PD175
PD751-3-16	PD751-4-16	PD751-2-16	2 Relays + 4-20 mA Output	PD176
PD751-3-17	PD751-4-17	PD751-2-17	4 Relays	PD177
PD751-3-18	PD751-4-18	PD751-2-18	4 Relays + 4-20 mA Output	PD178
120 Ω Nickel				
PD752-3-N	PD752-4-N	PD752-2-N	No Options	
PD752-3-14	PD752-4-14	PD752-2-14	2 Relays	PD174
PD752-3-15	PD752-4-15	PD752-2-15	4-20 mA Output	PD175
PD752-3-16	PD752-4-16	PD752-2-16	2 Relays + 4-20 mA Output	PD176
PD752-3-17	PD752-4-17	PD752-2-17	4 Relays	PD177
PD752-3-18	PD752-4-18	PD752-2-18	4 Relays + 4-20 mA Output	PD178

Notes:
*Quick Shipment Product, shipped within 2 working days.

**Part numbers for Option Cards when purchased separately.

G may be added after second field in the part number to call out meters with a green display for an additional charge; example: PD750-3G-14.

YOUR LOCAL DISTRIBUTOR IS:

Please visit the Precision Digital website at
www.predig.com
for complete information on the entire line of Precision Digital products, technical information and much more.

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